



THE PROXIMITY OF MUTUAL FUNDS DURING ECONOMIC GROWTH

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ABSTRACT

A mutual fund is a mechanism for investors to invest their money. It plays a significant role in establishing a relationship between savings and economic growth by mobilising savings and investing them in productive ways. Long-term, higher economic growth guarantees more freedom to work, save, and invest. Retail investors will thereafter invest in mutual funds at an increasing rate, mobilising significant financial resources for the Indian financial market's long-term, stable, and sustainable expansion. By pooling money from consumers and investing in the stock and debt markets, mutual funds enable portfolio diversification and risk minimization. The mutual fund sector is the most important resource mobilizer in this process. In its capacity as a resource mobilizer, industry moves exportable surplus from economies with surplus-spending units to those with deficit-spending units. Such an event is quite relevant for India, a developing nation. The mutual fund sector is thought to operate as a resource mobilizer, lowering transaction costs and boosting investor purchasing power to support genuine economic growth. The purpose of this research was to investigate the dynamics of the connection between mutual fund inflows and real GDP growth in India from 1990–1991. Using time-series econometric methodologies with cointegration and error-correction estimations, the author concludes that Granger causes domestic product growth causes mutual fund resource mobilisation in the long run but not in the short run. This finding has important policy implications because it suggests that more significant resource mobilisation in mutual funds will contribute to India's real economic growth.

KEYWORDS: Mutual funds, Asset Under Management, Economic Growth, Cointegration, Error Correction Model, Granger Causality

1. INTRODUCTION

A nation's actual economic growth will be aided by the efficient channelling of resources to deficit-spending units and the mobilisation of resources from surplus-spending units. For a growing nation like India to experience economic growth, resource mobilisation is crucial. It is impossible to overstate the importance of the mutual fund sector in this situation. A mutual fund is a collection of funds that is professionally managed by a fund manager. A trust that invests money in stocks, bonds, money market instruments, and/or other securities after collecting funds from several participants who have similar investing goals. Depending on the needs and risk tolerance of every investor, a wide range of various fund types are available for purchase in India through mutual funds, which combine the interests of numerous shareholders and invest them in a variety of securities. In India, mutual funds are a well-liked form of investing since they provide automatic diversification, liquidity, and expert management. Between 1990 and 2022, the total amount of money raised by mutual funds was highly variable. In 1998–1999, the combined assets of all mutual funds amounted to only 1.78 percent of GDP at constant prices. The rate increased to 16% in the following year. The ratio of total revenue to real GDP has been on the rise. Based on data from 71 countries, the average AUM to GDP ratio in 2020 was 182.14%. In Luxembourg, the value was 8306.59 percent, while in Malawi, it was 0.25 percent. From 1993 to 2020, the indicator can be accessed (World Bank, 2023). Therefore, the

Indian mutual fund industry is seen as essential to enlisting the nation's financial elites for the country's overall progress.

One of the financial system's competitive and fastest-growing sectors is the MF industry in India, which has grown over time. Despite the higher risks involved in such investments, MFs have been drawing in investors because of their expert management and the potential for bigger returns than those offered by conventional saving methods. The preference of households for MFs has shifted away from alternative financial and physical modes of savings in favour of a strong regulatory environment that is driven by the purpose of protecting investors' interests. Deepening MF penetration in India has also been aided by the regulatory reform activities of the SEBI, such as the bolstering of the distribution network, stricter disclosure requirements for AMCs, and increasing focus on investor education and awareness.

Retail investors will be enticed to invest in the mutual fund sector by lower transaction costs. Such an investment will eventually boost the investor's purchasing power. A rise in purchasing power will boost demand for goods and services, resulting in more prospects for sales. Income and output. As a result, the mutual fund sector is thought to have an impact on India's economic development. Therefore, the purpose of this research is to investigate the dynamics of a potential causal link between the resources amassed by the mutual fund sector and

economic growth in India from 1990–1991 to 2021–2022. A growth spurt in the mutual fund industry in India is covered in the next section, along with the study's data and methodology. After the empirical analysis includes discussion conclusion.

2. MUTUAL FUNDS AND LITERATURE REVIEW

The concept of mutual funds and the many types of funds are demonstrated by Rishab Telukunta (2017) in the research study titled “Mutual Funds and Systematic Investment plans with their top performing funds.” According to the survey, some mutual funds that are doing well in India are discussed. Major changes have occurred in the Indian mutual fund business, and these changes must be assessed. By examining past developments and present trends, it can be said that the future of mutual funds in India will likely hold many benefits for investors. The mutual fund sector has historically performed well and continues to do so. The fundamental guideline of mutual funds is that we should start early, invest regularly, and invest for a long period of time. The fund manager uses the funds raised to invest in securities like bonds and equities. The fund's portfolio is made up of the securities that were purchased. Owners of the scheme's units receive a portion of the gains made from these investments and capital appreciation according to the number of units they possess. As a result, a mutual fund offers a diverse investment opportunity, making it the ideal investment for the average investor. a collection of adequately managed securities available for a reasonable price (Chakrabarty and Rungtha, 2000)

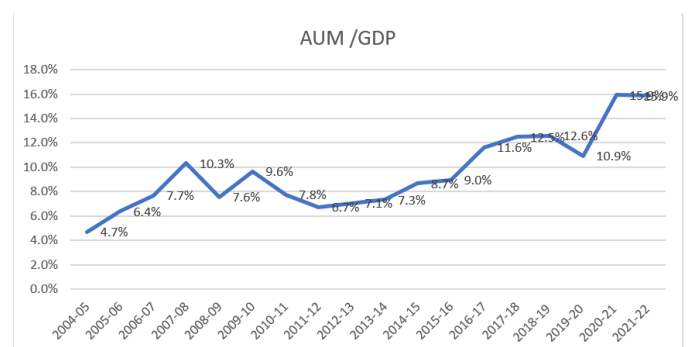
According to modern portfolio theory, all rational investors should have a market portfolio, which is a value-weighted portfolio comprising all assets. The idea of diversification is a vital component in portfolio selection. Diversification has its own drawbacks, though. While a sizeable portion of investors choose portfolios that are compatible with their values, other investors have not given up on the dream of owning investments that represent their unique personalities. They give preference to businesses that are socially or environmentally conscious and forego investing in well-known “sin stocks” or industries. Additionally, while adding more criteria may compromise the strategy's consistency, investing in exclusion funds has the advantage of being straightforward even if it results in subpar financial performance. (Blancard & Monjon, 2011) Mutual funds are based on a simple idea: disperse investments among several institutions to spread risk, which results in the consolidation of numerous smart assets (investments) into a single huge bucket. Because of this, transaction costs are reduced while at the same time increasing investors' purchasing power (Bellak and Timmerman, 1998) The fourth industrial revolution made significant contributions, one of which was the emergence of robo advisers as alternatives to traditional mutual funds. When compared to hybrid, equities, fixed income, and money market funds, robo advisers perform better because they are automated platforms that use automated algorithms to offer financial advice to investors. They outperformed three well-known market indices as well, and the outcomes held true across a range of risk-to-reward model configurations. The results showed that robo advisers not only offer simple accessibility and affordable guidance, but also command high

risk adjusted performance. (Ran Tao et al. 2021)

Mutual funds are one of the most popular investment options for those with middle-class incomes since they offer excellent interest rates and reasonable capital amounts when the mutual fund investment matures. Mutual funds are safe, with almost zero risk, delivering an optimum return on earnings, and safeguarding the interests of investors, according to intermediaries, which also reveal other significant facts. Customers can easily be misled by the marketing and deals pushed by numerous financial institutions. To benefit more from shifting market conditions, many investors change funds. Therefore, getting a solid grasp of mutual fund investments, industry players, and mutual fund experts is crucial (Ekta Rokade (2021)

As of December 31, 2022, there were 14.11 crore (141.1 million) total accounts (or folios in mutual fund parlance), whereas there were approximately 11.29 crore folios under equity, hybrid, and solution-oriented schemes, where most of the investment comes from the retail sector (112.9 million) (AMFI, 2023). Male family members have traditionally made financial and investment-related decisions in Indian society, and this practice is still prevalent in most homes. Most investors prefer to invest in open ended plans because they provide them the flexibility to purchase or redeem the funds whenever it is most convenient for them. Since public sector mutual fund companies are owned and controlled by the government, there are fewer opportunities for fraud and fund transparency is also maintained, according to most respondents, investing in public sector mutual funds is more safe and secure than doing so in private sector mutual funds. (Neelam Dhall et al. 2021)

The percentage of assets under management (AUM) to India's GDP climbed from 4.7% in 2004-05 to 15.9 % in 2021-22. (Figure 1). India's mutual fund AUM to GDP ratio, despite its rapid rise, is still substantially behind the global average of 75% at 15.9%. However, India's low penetration level (AUM-GDP ratio) points to a sizable future development potential.



Source: SEBI, RBI and AMFI

Figure 1: shows India's AUM to GDP Ratio (at current prices)

Mutual funds' rising popularity is a reflection of how little the general public knows and understands about them. It gives a general review of the mutual fund sector in India and discusses factors such as a lack of objective research that contribute to

the sector's low penetration. It assesses the sector globally and brings up important questions about mutual fund ownership and performance, the sensitivity of fund flows to performance, and the significance of regulation for the sector's expansion that have all gone largely unexplored in India. The opinions of top practitioners are then captured on these and other concerns, such as the difficulties created by low financial literacy, the nation's equity culture, and the regulatory environment's lack of support (Kale & Panchapagesan, 2012). The correlation between the total amount of money raised by mutual funds from 1970–1971 to 2008–2009 and the real economic growth of a developing nation like India. In the long run, but not in the short run, the growth in real gross domestic product and gross resource mobilisation by mutual funds can be estimated using time series econometric methods such as cointegration and error correction estimates (Mishra, 2012). The awareness, perception, and socioeconomic characteristics of individual investors could be used to explain investment behaviour. Investment in mutual funds will benefit from increased knowledge about the many components of mutual funds. Contrary to popular opinion, the choice to invest was unaffected by risk perception for mutual funds. Additionally, socioeconomic traits of investors like age, gender, occupation, income, and education influenced their level of knowledge about mutual funds. (Kaur and Kaushik) 2016 Specifically, through the pathways of capital development,

employment creation, and output growth, investment improves welfare. The Global Competitiveness Index (GCI) and the Ease of Doing Business Index are two often used metrics of a country's capacity to draw investment (EDBI). A favourable correlation between them would fundamentally support the idea that increased investment leads to increased prosperity. GCI and per capita GDP have a generally favourable relationship. (Debdatta Pal et al. 2022)

Increasing geographic distribution and a broadening base of investors show that MFs as an asset class are maturing in India. Given that they are the largest lenders in the CBLO segment, MFs in India have grown to be significant players in the equity and corporate bond markets, in addition to giving the money market essential liquidity assistance. Their capacity to affect price changes in the equities and debt markets and domestic liquidity situations has grown over time. Despite a 15% AUM/GDP ratio, a comparison to the current situation of the global MF business reveals that India's MF penetration level needs to rise steadily with increased involvement from retail investors. Thus, in the Indian financial sector, resource mobilisation via mutual funds is crucial. Table 1 displays the amount of money the Indian mutual fund sector pooled from 1990–1991 to 2021–2022.

YEAR	MF Gross Resources (Rs. in Crore)	MF Net Resources (Rs. in Crore)	AUM(Rs.in Crore)	GDP at constant price(Rs.in Crore)	AUM/GDP at constant price (%)	AUM/GDP at current price(%)
1990-91	6449	7509	-	2514548.661	-	-
1991-92	11266	11253	-	2541123.202	-	-
1992-93	13029	13021	-	2680437.639	-	-
1993-94	62076	11243	-	2807779.233	-	-
1994-95	13727	11275	-	2994747.12	-	-
1995-96	6508	-5833	-	3221583.997	-	-
1996-97	4777	-2035	-	3464798.197	-	-
1997-98	11406	4065	-	3605116.317	-	-
1998-99	22710	2695	68193	3828071.701	1.781	-
1999-00	61241	22118	107946	4166693.566	2.591	-
2000-01	92957	11136	90586	4326735.898	2.094	-
2001-02	164523	10119	100594	4535456.178	2.218	-
2002-03	314706	4582	109299	4707983.811	2.322	-
2003-04	590190	47873	139616	5078049.299	2.749	-
2004-05	839708	2788	149600	5480379.926	2.730	4.70
2005-06	1098149	52482	231862	5914614.027	3.920	6.38
2006-07	1938493	94062	326292	6391375.247	5.105	7.67
2007-08	4464377	158677	505152	6881006.684	7.341	10.31
2008-09	5426353	-24208	417300	7093402.584	5.883	7.57
2009-10	10019023	78351	613979	7651078.01	8.025	9.64
2010-11	8859515	-48600	592250	8301234.844	7.134	7.76
2011-12	6819679	-45414	587217	8736328.711	6.722	6.72
2012-13	7267885	76485	701443	9213016.769	7.614	7.05
2013-14	9768101	54580	825240	9801369.822	8.420	7.35
2014-15	11086259.63	102880	1082757	10527673.63	10.285	8.68
2015-16	13765555.06	131005	1232824	11369493.14	10.843	8.95

2016-17	17615548.86	343417	1754619	12308193.22	14.256	11.40
2017-18	20998651.95	272226	2136036	13144582.14	16.250	12.50
2018-19	24394362.48	109702	2379584	13992913.94	17.006	12.59
2019-20	18813457.77	87297	2226203	14515957.66	15.336	11.09
2020-21	8639166.9	214742	3142764	13558473.4	23.179	15.87
2021-22	8333445.49	246124	3756683	14735515.49	25.494	15.87

Source: SEBI and RBI Annual Data

Table 1: Mutual Fund Gross Resources Rs.in Crore and AUM/GDP Ratio.

3. DATA AND METHODOLOGY

This study uses annual data for the years 1998–1999 to 2021–2022 to examine the relationship between the industry's pooled investment resources and economic growth in India. Asset Under Management (AUM) and Economic Growth are the study's variables (EG). Among the mutual funds expressed in crores of rupees. In India, real GDP is used as a stand-in for economic growth. Statistics on the Indian Economy have all the information required for the sample period. Database on the Indian Economy by RBI and SEBI's Reports and Statistics. All multifariousness issues are avoided by using the variables in their original forms. There are three steps in the learning process: The unit root test, the cointegration test, and the vector error correction model (VECM).

4. ANALYSES BASED ON SECONDARY DATA AND RESULTS

The t-test was used to determine the significance of the Pearson's correlation coefficient between the AUM by mutual funds and real GDP over the study period. Between these two-time series across the sample period, the Pearson correlation coefficient (r) value is 0.924. It demonstrates that real GDP and gross money mobilised by mutual funds are positively correlated in India and that there is strong evidence of a correlation between these two variables. To determine if a correlation coefficient is statistically significant you can perform a t-test, which involves calculating a t-score and a corresponding p-value.

$$t = r\sqrt{(n-2)/(1-r^2)}$$

The Student's t-test has been used to determine whether this value of "r" indicates a significant association between two time series, the crucial value of 't' at 5% level of significance is less than .05. Therefore, it can be concluded that there is a statistically significant association between the real GDP and the AUM by mutual funds. The issue over the causal relationship between gross money mobilised by mutual funds and real GDP remains unresolved since correlation does not address long-term causal relationships.

The order of integration for each of the two variables utilised in the empirical analysis must be established before continuing. This was accomplished using the ADF unit root test, Table 2 reports the test's outcomes. The null hypothesis of no unit roots for both is evident. Since the ADF test statistic values are below the crucial values at 10%, 5%, and 1% levels of significance, the time series is rejected at their initial differences. The variables are therefore stationary and integrated of the same order, i.e. I (1).

4.1 Unit Root Test

The stationarity characteristics of each time series under discussion are first examined using econometric techniques. The stationarity of the data series is investigated in the current study using the augmented Dickey Fuller (ADF) unit root test.

$$\Delta y_t = y_t - y_{t-1} = \alpha + \beta t + \rho y_{t-1} + e_t$$

$$\text{Constant and trend: } \Delta y_t = \alpha + \gamma y_{t-1} + \lambda_t + \sum_{s=1}^m a_s \Delta y_{t-s} + v_t$$

DF or Dickey and Fuller test

$Y_t = bY_{t-1} + e_t$, here if b greater than 1 it means series will be explosive

If b is less than 1 it means the effect of lag values will die out and relationship between current and lag value will be no more. This shows the series is stationary.

If b = 1, it means every lag value reflects in current value and the effect will be constant, this shows relationship exist between current and lag values will remain throughout the sample. This means that series is non stationary. The series has a unit root (b=1). When we test the stationary properties of any series, the test is called unit root test. Unit root test of ADF, Ho: Series is not stationary, H1: Series is stationary. If p value is greater than 0.05 it means accept Ho which shows series is non stationary, if p value is less than 0.05 it means reject Ho which shows series is stationary.

Variables	Level		1st Difference	
	C	C&T	C	C&T
LAUM	1	0.9995	0.9658	0.0042
LGDP	0.9935	0.5091	0.0021	0.0061

Source: Calculation made by author.

Table 2: Unit Root Test result

AUM at level is non stationary and at 1st difference is (in trend and intercept-C&T) stationary

GDP at level is non stationary and at 1st difference is stationary

The hypotheses for the test:

- The null hypothesis for this test is that there is a unit root (Series is Non-Stationary) If Probability value is $\leq 5\%$, reject Ho
- The alternate hypothesis differs slightly according to which equation using. The basic alternate is that the time series is stationary (or trend-stationary).

Variables 1st difference is (in trend and intercept-C&T)	ADF Statistic	Critical Values	Probability value	Decision
LAUM _t	-4.854006	1% level : -4.440739 5% level : -3.632896 10% level: -3.254671	0.0042	Reject the null hypothesis
LGDP _t	-4.676987	1% level : -4.440739 5% level : -3.632896 10% level: -3.254671	0.0061	Reject the null hypothesis

Source: Calculation made by author.

Table 3: Results of Augmented Dickey Fuller Unit Root Test

A unit root is a characteristic of some stochastic processes (such as random walks) in probability theory and statistics that can lead to issues with statistical inference when using time series models. The unit root is non-stationary but does not always have a trend component, to put it simply.

The following presumptions are used when conducting the ADF test.

(H₀) Null Hypothesis Series either have a unit root or are non-stationary. A second possibility is that the series is stagnant or that it lacks a unit root.

This test may show that the series is not stationary if the null hypothesis cannot be proved.

Requirements to Disprove the Null Hypothesis (H₀)

- Reject the null hypothesis if the test statistic's critical value and p-value are both 0.05. (H₀) Time series, then, are stationary because they lack a unit root. It does not have a structure that changes over time.

Considering this, the variables' first differences from the intercept and linear trend Both the LAUM test statistic and the LGDP test statistic are smaller than any critical values at -4.854006 and -4.676987, respectively (Table 3). The p-values for LAUM and LGDP are 0.0042 and 0.0061, respectively. Both values are below the significance level of 0.05 and the ADF statistic is below any of the crucial levels. Therefore, it is obvious that the null hypothesis should be rejected. As a result,

the time series is stationary, that is, it lacks a unit root, which indicates that it is stationary. It does not have a structure that changes over time.

The test for a unit root is run in this ADF technique on the regression's coefficient of

y_{t-1} . The idea that y_t includes a unit root is disproved if the coefficient differs sufficiently from zero. Stationarity is implied by the null hypothesis being rejected. The variable y_t being a nonstationary series is the null hypothesis, and this hypothesis is rejected when it is considerably negative. The series is non-stationary and the null hypothesis is not rejected if the estimated value of the ADF statistic is higher than McKinnon's crucial values. As an alternative, the null hypothesis' rejection indicates stationarity. Further differencing is carried out until stationarity is obtained and the null hypothesis is rejected. If the null hypothesis is not rejected, the test on the difference of the series is undertaken. The time series (variables) can be integrated if their first differences are stationary even if their levels are non-stationary.

4.2 Cointegration Test

The next stage is to check for any long-run equilibrium linkages between the variables after the unit root of a data series has been found. This procedure, called cointegration analysis, is essential for lowering the likelihood of incorrect regression. The importance of cointegration analysis is that a vector autoregression (VAR) model in the first difference is mis specified due to the impacts of a common trend if two non-stationary variables are cointegrated. If a cointegration relationship is found, the model should consider residuals from the vectors in the dynamic VECM system that are lagged by one period. The Johansen's cointegration test is employed at this stage to determine whether the variables are cointegrating (Johansen and Jusellius 1990; Johansen, 1991). To find cointegrated vectors in non-stationary time series, the Johansen approach employs the greatest likelihood technique. Using the Johansen maximum likelihood approach, the null of non-cointegration is tested against the alternative of cointegration's presence.

The Hypothesis is stated as:

H₀: No cointegrating equation

H₁: H₀ is not true

Rejection of the null hypothesis is at 5% level.

Johansen cointegration test result reported in Table:4 indicate that there is one cointegrating relationships between variables meaning that there is significant long run relationship between variables.

Hypothesized Number of Cointegrating Equations	Eigen Value	Trace Statistics	Critical Value at 5%	Prob.* (p-value)	Maximum Eigen Statistics	Critical Value at 5%	Prob.** (p-value)
None *	0.618797	27.19776	25.87211	0.0340	20.25290	19.38704	0.0374
At most 1	0.281585	6.944862	12.51798	0.3503	6.944862	12.51798	0.3503

Source: Calculation made by author.

Table:4 Johansen's cointegration test

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Table:5 Normalized cointegrating equation = GDP -6.480584AUM

Coefficient sign should be reversed in the normalised cointegration equation model which representing the long run. GDP is the target variable; AUM has a positive and significant impact on GDP in the long run. An increase in AUM will lead to a increase in GDP.

Equation(s): Cointegrating		Log likelihood	-565.4170
Normalized cointegrating coefficients (standard error in parentheses)			
GDP	DUM	@TREND(2)	
1.000000	-6.480584	149609.2	
	(0.93806)	(117364.)	

Source: Calculation made by author.

As per the Table: 4 The Johansen's trace and maximum eigenvalue tests have been used to examine the cointegration between the stationary variables. At a 5% level of significance, the trace test reveals the existence of one cointegrating equation. And this finding is confirmed by the maximum eigenvalue test. As a result, there is a long-term equilibrium relationship between the two research variables. However, there may be short-term variations from this equilibrium, and we must determine whether these variations converge to the long-term equilibrium. Thus, the short-run dynamics have been produced using VECM. A fraction of the disequilibrium can be addressed in the subsequent era thanks to error correcting mechanisms. Error correcting mechanisms are thus a way to balance short- and long-term behaviour.

4.3 Model for Vector Error Correction (VECM)

The third phase demands the creation of an error correction mechanism to describe dynamic relationships once the existence of cointegration between variables has been established. The error correction model's goal is to show how quickly the short-run equilibrium shifts to the long-run equilibrium.

A restricted VAR called a VECM is made for non-stationary series that are known to have cointegration.

The VECM illustrates how the investigated model is adjusting in each time period towards its long-run equilibrium state after the equilibrium constraints are implemented. Assuming that the variables are cointegrated, departures from the long-run equilibrium will, in the short run, have an impact on the dependant variables' changes, causing them to move closer to the long-run equilibrium state. Because of this, each of the cointegrated vectors—from which the error correction factors are derived—indicates a distinct direction in which a reliable long-run equilibrium state exists.

The cointegration relations embedded into the VECM specification limit the endogenous variables' long-run behaviour to converge to their cointegrating connection while permitting

short-run adjustment processes. Since the departure from long-run equilibrium is gradually corrected through a succession of partial short-run adjustments, the cointegration component is also referred to as the error correction term.

While the error correction term is kept, the dynamic definition of the VECM permits the erasure of the irrelevant variables. The magnitude of the error correction term represents the rate at which any imbalance is brought into long-run equilibrium.

$$VECM: \Delta y_t = \beta_0 + \sum_{i=1}^n \beta_1 \Delta y_{t-i} + \sum_{i=0}^n \delta_i \Delta x_{t-i} + \phi z_{t-1} + \mu_t$$

$$VECM : \Delta GDP_t = -0.3585 \Delta ECT_{t-1} + 0.6288 \Delta GDP_{t-1} + 1.4500 \Delta AUM_{t-1} - 387.53$$

Standard errors in () & t-statistics in []		
Cointegrating Eq:	CointEq1	
GDP(-1)	1.000000	
DUM(-1)	-1.424908	
	(0.26858)	
	[-5.30541]	
C	-3766413.	
(ECT)Error Correction:	D(GDP)	D(DUM)
CointEq1	-0.358511	0.428857
	(0.14321)	(0.08789)
	[-2.50339]	[4.87921]
D(GDP(-1))	0.628872	-0.605226
	(0.24664)	(0.15137)
	[2.54976]	[-3.99821]
D(DUM(-1))	1.450014	0.075040
	(0.28314)	(0.17378)
	[5.12117]	[0.43182]
C	-387.5312	423050.8
	(141819.)	(87041.3)
	[-0.00273]	[4.86035]
R-squared	0.613816	0.601685
Adj. R-squared	0.549452	0.535299
Sum sq. resids	1.40E+12	5.28E+11
S.E. equation	279068.0	171277.2
F-statistic	9.536635	9.063464
Log likelihood	-304.8719	-294.1321
Akaike AIC	28.07926	27.10292
Schwarz SC	28.27764	27.30129
Mean dependent	480401.0	165851.7
S.D. dependent	415757.0	251253.9

Source: Calculation made by author.

Table 6: Vector Error Correction Estimates

Error correction coefficient gives the speed of adjustments within which the model will restore its equilibrium following any disturbance. The coefficient of ECT with GDP as depended variable are negative and statistically significant that there is a convergence from short dynamics towards long run equilibrium. The adjustment coefficients were 0.35 percent towards long run

equilibrium in case of disequilibrium situation. In case of AUM the adjustment coefficient were 0.42 percent towards long run equilibrium in case of disequilibrium situation.

The selection of an adequate lag length is necessary for VECM estimation. The Akaike Information Criterion (AIC) and Schwartz-Bayesian Information Criterion (SBIC) are used to choose the optimal lag length in single-variable distributed-lag mod-els. The estimated error correction model is then used with the calculated regression coefficients, and the outcomes are shown in Table 6. The estimated coefficient of error correction term (ECT) in the LAUM equation is statistically significant and has a negative sign, which confirms that there are no issues with the long-run equilibrium relationship between the independent and dependent variables. Its relative value (-0.359) for India also demonstrates the rate of convergence to the equilibrium state annually. The rate of correction of any disequilibrium toward a long-run equilibrium is precisely measured by the amount of disequilibrium in AUM by mutual funds that is corrected annually, or around 35.9% of the total disequilibrium. Furthermore, the error correction coefficient's negative and statistically significant value suggests that there is a long-term causal relationship between the study's variables. Additionally, this causality is unidirectional in our model, with AUM by mutual funds following the real GDP (a measure of real economic growth). In other words, actual GDP may account for fluctuations in mutual fund AUM.

Dependent Variable: D(GDP)				
Method: Least Squares (Gauss-Newton / Marquardt steps)				
D(GDP) = C(1)*(GDP(-1) - 1.42490790894*DUM(-1) - 280421.713427				
*@TREND(1) - 3766412.52295) + C(2)*D(GDP(-1)) + C(3)				
*D(DUM(-1)) + C(4)				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.358511	0.143210	-2.503394	0.0222
C(2)	0.628872	0.246640	2.549759	0.0201
C(3)	1.450014	0.283141	5.121173	0.0001
C(4)	-387.5312	141819.4	-0.002733	0.9978
R-squared	0.613816	Mean dependent var	480401.0	
Adjusted R-squared	0.549452	S.D. dependent var	415757.0	
S.E. of regression	279068.0	Akaike info criterion	28.07926	
Sum squared resid	1.40E+12	Schwarz criterion	28.27764	
Log likelihood	-304.8719	Hannan-Quinn criter.	28.12599	
F-statistic	9.536635	Durbin-Watson stat	2.084798	
Prob(F-statistic)	0.000544			

Source: Calculation made by author.

Table 7: Long run coefficient table

Negative and statistically significant long run coefficient C (1) demonstrates long run causality from AUM to GDP. Coefficients with a negative sign indicate a tendency to revert to their original values. Since the sign is positive, it denotes a deviation from neutrality. An increase in the short-run coefficient C (2) by one percentage point raises the corresponding GDP growth rate to 6.2%. To answer your question, C (3), a rise in AUM will boost GDP growth by 1.4%. Intercept or constant C (4) (Table 7).

4.4 Stability Diagnostics

Stability diagnostics of long-term relation of AUM and GDP can be presented through CUSUM chart.

Cumulative sums (CUSUMs) of each sample value's discrepancy from the target value are plotted in the CUSUM chart. If the process mean begins to wander somewhat in either direction, the cumulative deviation values will rise (or fall) consistently in the CUSUM chart. Two tabular CUSUMs make up the following components of a CUSUM chart:

Total outliers, represented by a scatter plot of dots, are added together. Points that represent the sum of all errors relative to the ideal are shown on the graph. The axis of the zero-pointed centre line. The boundaries of acceptable variation, set at four standard deviations from the mean. Check the higher and lower CUSUMs on the CUSUM chart for any upward or downward trends. As a rule, the points on the graph should wildly oscillate about zero. The process mean has altered if an upward or downward trend occurs, suggesting the presence of specific reasons. Indicates the process is out of control if the points they represent are plotted outside the control bounds.

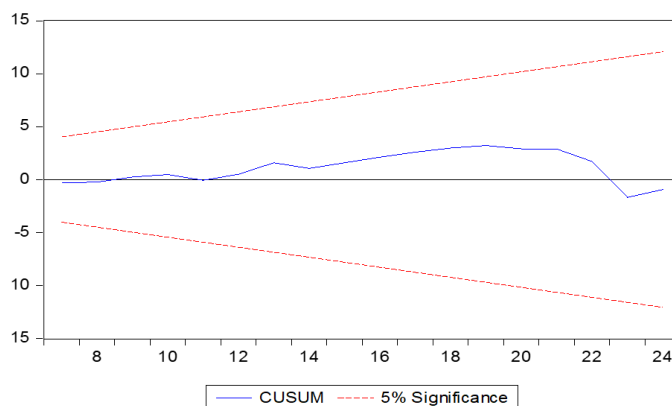


Figure 2: Cumulative sums (CUSUM) chart. (The Process Variation is in Control)

Source: Calculation made by author

When T (GDP) is the target value, the sum will fluctuate arbitrarily about zero. When the mean increases to a new value, ($> T$), however, the total immediately begins to trend upwards. Cumulative sums can be plotted in either the positive or negative direction on the CUSUM chart. Here the Figure 2 shows CUSUM lines indicates the relation of AUM and GDP is stable, the points they represent are plotted inside the control bounds.

4.5 Granger causality test

Since cointegration exists, Granger causality must occur, at least in some direction (Granger, 1988). The VECM's long-run causality test suggests that the relationship between real GDP and AUM by mutual funds is causal; the ECT contributes to explaining the variations in AUM by mutual funds because its coefficient in the LAUM equation is statistically significant and negative, according to the standard t-test. Nonetheless, the error term's (ECT) coefficient in the GDP equation is positive and statistically insignificant, suggesting that the ECT makes no contribution to explaining fluctuations in real GDP. Since mutual funds in India contribute significantly to the country's actual GDP, the two are causally linked. According to VECM calculations, there is no short-run causality from real GDP to AUM by mutual funds because the coefficients of the first differences of LAUM and LGDP lagged one period in the LAUM equation in Table 8 are statistically insignificant. The conventional Granger causality test based on F-statistics was done to corroborate the finding of short-run causation between the LAUM and the LGDP based on VECM estimations. According to Table 8, at the 5% level of significance, there is no Granger causation between real GDP and AUM by mutual funds. These results corroborate the earlier VECM finding that no short-run causality exists at the 5% level of significance. This causality test suggests that fluctuations in real GDP are responsible for long-term shifts in mutual funds' assets under management (AUM), but not for shorter-term.

Granger Causality Tests			
Lags: 2			
Null Hypothesis:	F-Statistic	Prob.	Decision
Δ LAUM does not Granger Cause Δ LGDP	20.6420	2.8291	Do not Reject H_0
Δ LGDP does not Granger Cause Δ LDUM	2.80871	0.0883	Do not Reject H_0

Source: Calculation made by author

Table 8: Granger Causality Tests

According to VECM calculations, there is no short-run causal relationship between real GDP and gross funds mobilised by mutual funds based on the coefficients of first differences of LAUM and LGDP lagged one period in the LAUM equation in Table: 8 A typical Granger causality test based on F-statistics has been conducted to corroborate the finding of short-run causality between the LAUM and the LGDP based on VECM estimates. The results in Table- 8 show that, at the 5% level of significance, real GDP does not Granger cause the gross funds mobilised by mutual funds. This conclusion confirms the earlier VECM finding that no short-run causation is at the 5% significance level. According to this causality test, changes in real GDP have a long -term, but not immediate, impact on the gross funds mobilised by mutual funds.

Mutual funds serve a crucial role in a developing country like India by helping to mobilise savings and invest them in productive ways, thereby creating a connection between

savings and economic progress. Real economic growth in a country occurs over very lengthy time periods. Bigger long-term economic growth assures a greater potential for work, savings, and investment. And in this age of rapid growth trajectory, mutual funds are the most sought-after investible asset since they offer superior chances for long-term risk diversification, secured investment, and adequate return. Because of this, investment in mutual funds is likely to increase in value as managers are incentivized to create new types of financial products. Therefore, retail investors would increase their participation in mutual funds, bringing a large amount of capital to the financial market of India and ensuring its long-term stable and sustainable growth. However, the growth of the mutual funds industry requires a stable and responsible fiscal policy, responsible social spending, a competitive financial system, and adequate regulation

5. DISCUSSION

The results of the performed empirical research shows that Asset Under Management in India is positively correlated with real economic growth across the sample period, there is a unidirectional causal relationship between real economic growth (GDP) and Asset Under Management in India. In a country like India, with its relatively new market economy, this is readily apparent. The conclusion is that the financial sector will expand strongly as a result of the country's real economic growth, and that this will make the financial intermediation process efficient enough to optimally deploy economic resources, so ensuring future growth of the economy. Consequently, it is crucial for a growing nation like India to encourage and regulate economic growth. In particular, the country places a premium on economic growth, social development, and the reduction of poverty. It is widely agreed that resource mobilisation is the cornerstone of self-sustaining development. Effective resource mobilisation allows for the funding of domestic investment and social investment programmes, which are crucial to economic growth and the reduction of poverty. There are several facets of a country's economy that contribute to resource mobilisation. Having more disposable income allows a country to save and invest more, which in turn contributes to economic growth. As a result, increased productivity, and a greater ability to mobilise resources feed off of one another. In order to increase domestic private and public investments, especially in physical and social infrastructure, countries need to formulate and pursue several macroeconomic, microeconomic, and institutional policies that should create an enabling environment for increased resource mobilisation for economic growth and development. Prudent policies are essential to ensure macroeconomic stability, low inflation, and the availability of enough financial resources to both the private and governmental sectors. Self-regulation and self-monitoring by financial institutions are hallmarks of an effective regulatory system, as is providing enough leeway for market participants to behave flexibly while still containing measures that encourage good practises. The results of good regulation are development in the market infrastructure that promotes investor protection, introduction of an effective judicial system and availability of high-quality economic information. Economic resource mobilisation and allocation are both improved by all these factors. Therefore, any nation needs

a diversified, well-functioning, and competitive financial sector to effectively mobilise savings and put them to work. One of the primary roles of a financial system is to act as an intermediary between the savings of ordinary people and the investment and production needs of large corporations. Therefore, it is important to build appropriate financial intermediation systems that drive savings and investment to promote growth and development, as this is essential for effective resource mobilisation. A part of this duty is making it feasible to get the funds that are essential for investing.

Increases in the number of schemes, total money raised, and number of investors have all contributed to fiercer competition in India's mutual fund market. The increasing ferocity of market competition necessitates that investors, fund managers, academics, and policymakers conduct a rigorous evaluation of mutual funds in relation to actual economic growth. Using standard time series methods, this article examines the connection between the total amount of money invested in mutual funds and the expansion of the Indian economy. The ADF unit root test demonstrates that the time series are integrated of order one, hence this analysis of data attributes establishes the stationarity of the series. Cointegration between mutual fund AUM and real GDP was found using Johansen's technique. So, even if the study's variables are out of whack in the here-and-now, they will eventually settle into a state of long-run equilibrium. According to the VAR-based VECM, annual correction of disequilibrium averages 35.9 percent.

Furthermore, the presence of a long-run equilibrium link between real GDP and Asset Under Management by mutual funds is supported by the negative and large error correction factor in the LAUM equation. Further, the VECM estimations show that real GDP drives mutual funds' AUM. Granger causality test results show a long-run, but not a short-run, correlation between real GDP and Assets Under Management held by mutual funds. As the real economy expands, the demand for financial services may promote a more vigorous development of the financial sector, according to this idea. This has important policy implications since it suggests that national economic growth could be the policy variable used to boost economic resource mobilisation (Patrick's (1966). But that does not negate the fact that AUM have a role for faster GDP expansion. As a result, there is room for expansion in the present analysis and in the ensuing empirical investigation.

6. CONCLUSIONS

This study is ground-breaking in finance since it applies the VECM and finds long-run equilibrium and a causal relationship between real economic growth and Asset Under Management by mutual funds. Such a long-term causation suggests that rising real GDP may be one possible explanation for the booming Indian mutual funds industry's AUM. Increases in real GDP lead to increases in real per capita income. A higher standard of living, after accounting for inflation, usually results in a higher marginal propensity to save and invest. The mutual fund business is particularly important at the present time because of the role it plays in channelling economic surpluses into productive investment. Specifically, mutual funds play a

prominent role in financial intermediation by their ability to mobilise resources, allocate those resources, and contribute to the expansion of capital markets and the corporate sector. However, various problems, including inefficient supervisory and prudential rules, a lack of availability of basic infrastructural facilities and skilled staff, an asymmetry of information flow, and inflation, may impede the mutual fund industry's ability to act as an intermediary.

Considering this, it is recommended that adequate infrastructural facilities be made available, that trained personnel who have the knowledge and skills to manage the funds, market the products, and carry out the various tasks involved in the process be encouraged, that informational efficiency be bolstered through the application of information and communication technology, and that inflation be kept safely below the safe level. All these call for action on the part of the national government at the macro level and for managers to play a positive role at the micro level. Managing interest rates, maintaining price stability, and creating a climate conducive to risk-free investment on the part of small investors all fall under the purview of government, which should implement legislation to that effect. Managers are tasked with a wide range of responsibilities, including but not limited to: designing profitable and secure financial instruments; creating a good portfolio for risk diversification and return optimization; bringing an efficient flow of information; implementing international best practises; efficiently managing intangible assets (human capital, information capital, and organisation capital); and, most importantly, developing a culture of mutual fund investment. By investing in mutual funds, the economy would benefit. It is impossible to achieve sustainable development, which can help people all around the world improve their standard of living, without first achieving sustained and inclusive economic growth. New and improved job possibilities and increased financial stability for all can result from a flourishing economy.

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